THE

EIGHTH ANNUAL REPORT

OF THE

MYSTIC WATER BOARD

OF THE

CITY OF CHARLESTOWN, MASS.,

TO THE

CITY COUNCIL,

For the Year Ending December 31, 1872.

CHARLESTOWN:
PRINTED BY CALEB RAND.
1873.

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REPORT OF THE MYSTIC WATER BOARD.

OFFICE OF THE MYSTIC WATER BOARD,
CHARLESTOWN, March 15, 1873.

TO THE CITY COUNCIL:

Gents, — The Mystic Water Board has the honor to submit the Eighth Annual Report of the operations of the Water Works, together with the Annual Reports of the Clerk of the Board, and the Superintendent of the works.

The report of the Clerk, who likewise performs the duties of Water Registrar, shows the number of water takers supplied, the kind of buildings, and number and kind of fixtures contained therein. Also, the amount of moneys assessed and received for water rates, by which it will be seen, that the increased amount of water rates favorably compares with the cost of the extension and maintenance of the works.

The report of the Superintendent exhibits in detail the repairs and extensions; the quantities of pipe laid in this and other cities, supplied from this source; the quantity of water pumped and supplied; the operation of the engines, and other general information.

The enlargement, and the necessary alteration of the engine and boiler house, for the reception of the new engine, including cost of resetting old boilers, and new flue, was completed in October, at a cost of $28,430.00.

The No. 3 engine and boilers ordered of H. R. Worthington, Esq., of New York, were put in successful operation in July, and after a very satisfactory trial, they were accepted by the Board, and the amount of contract, $68,250.00, paid in settlement.

The pipes to connect with the 30-inch force main, with the gates, check-valve, grubbing for the same, were completed, at a cost of

about $9,900. The cost of land, grading, fences, drains, edge-stones, paving, etc., was about $5,300.

The Board does not anticipate the necessity of any extraordinary outlay during the present year. Should the city council determine to lay out new streets, the necessity for new mains and services in such streets will occur. And the Board takes occasion here to recommend that the construction account be closed, and that the cost of the extension of new mains and service pipes be charged in the maintenance account, and defrayed from the receipts for water, thus preventing the necessity for issuing additional bonds.

The Board respectfully commends to the city council the equity of causing all the expense of new water-pipes, or that of lowering or raising the old ones where changes of grade of streets are ordered, to be included in the estimates for such change of grades, and paid for from the appropriations for these purposes, as is the custom in other cities. A very considerable expense has heretofore been entailed upon the Water Works for these changes.

The attention of the school committee has been called to the enormous consumption of water under the present arrangement for supplying some of the school-houses, and it is hoped that the committee on public property of the city council will co-operate in such measures as will remedy the evil.

The large increase in the consumption of water demonstrates the fact that the Board acted wisely, and none too promptly, in recommending the city council to authorize the construction of the new thirty, twenty, and sixteen pipes for supply and distribution, and also the third pumping-engine, as it would be utterly impossible to furnish a supply at this time without them; the full capacity of the new pump and nearly that of one of the old ones being necessary to keep up the supply.

After the new engine was in successful operation, an examination of engine No. 1 and the check valves was had, and they were both found to be in such condition that we should have been unable to use either many days longer, which would have deprived the city of water for some days at least. The check valves have been put in as good order as when new, and the engine has been under-

going thorough repairs which will soon be finished and in prime order. This engine has been run between eight and nine years, at a trifling cost for repairs.

The condition of the works is believed to be good in every respect, and very satisfactory to the Board.

In consequence of the great increase of rain-fall the past year, the supply of water at the lake has been greatly in excess of the past few years.

The trials of the suits in regard to the right of drainage at Woburn and Winchester, have been delayed in consequence of the professional engagements of the counsel on one side or the other, from time to time; but we have assurance of an immediate hearing, and we doubt not with favorable results.

COST OF MAINTENANCE OF THE WORKS, 1872.

Salaries		$4,249 99
Printing, advertising and stationery		490 55
Labor, tools, materials, etc. for repairs, contingencies		17,724 50
Clerk hire		1,233 00
Shop rent		400 00
Insurance		940 00
		$25,038 04

PUMPING SERVICE.

Fuel	$24,195 37	
Oil, tallow, tools, repairs	1,665 13	
Pay of engineers and firemen	6,483 75	
		$32,344 25
		$57,382 29

The aggregate amount of water rates to January 1st, 1873, is $860,586.70.

Cost of construction to March 1st, 1873, is $1,461,259.41.

The amount of outstanding water bonds is $1,364,000.

" " " sinking fund, March 1st, is $68,770.55.

The Board is gratified to say that their connection with the several water boards and committees of the adjoining places supplied with the Mystic water, have been of an agreeable nature, and that the several contracts have been satisfactorily carried out.

The Board again takes great pleasure in saying that they feel under obligations to the Clerk and Registrar, for the faithful and efficient manner in which he has discharged the duties of his office, and also the Superintendent and the other officers who have discharged their duties in a satisfactory manner.

Respectfully submitted.

EDWARD LAWRENCE.
FRANCIS CHILDS.
L. R. BINGHAM.
JOHN FENDERSON.
EDGAR B. MOORE.

APPENDIX.

ORGANIZATION OF THE WATER WORKS FROM THEIR COMMENCEMENT TO APRIL 1ST, 1873.

Water Commissioners.

EDWARD LAWRENCE, Chairman, from Jan. 8, 1862, to Feb. 28, 1865.
MATTHEW RICE, " " " Mar. 8, 1864.
GEORGE H. JACOBS, " " " June 11, 1863.
PHILANDER S. BRIGGS, from Mar. 12, 1864, to Feb. 28, 1865.
MARSHALL N. CUTTER, " " " " "

Engineers.

CHAS. L. STEVENSON, Principal from Apr. 8, 1862, to Feb. 28, 1865
GEO. R. BALDWIN, Consulting, " " " " "

Clerks.

CHAS. POOLE, from Apr. 8, 1862, to Mar. 6, 1863.
WM. W. PEIRCE, from Mar. 10, 1863, to Feb. 28, 1865.

MYSTIC WATER BOARD.

1865.

Edward Lawrence, *President.* — Edwin F. Adams,
James Dana, — Horatio P. Dunnels.
Everett Torrey,
W. W. Peirce, *Clerk.* — Walter Robbins, *Sup't.*

1866.

Edward Lawrence, *President.* — Edwin F. Adams,
James Dana, — G. Frederick Hurd.
Everett Torrey,
W. W. Peirce, *Clerk.* — H. G. Beatley, *Sup't.*

1867.

Edward Lawrence, *President.*	John B. Wilson,
James Dana,	Samuel M. Nesmith.
Everett Torrey,	
William W. Peirce, *Clerk.*	H. G. Beatley, *Superintendent.*

1868.

Edward Lawrence, *President.*	Abel E. Bridge,
James Dana,	Thomas R. B. Edmands.
Everett Torrey,	
W. W. Peirce, *Clerk.*	H. G. Beatley, *Sup't.*
	Charles H. Bigelow, "

1869.

Edward Lawrence, *President.*	Abel E. Bridge,
James Dana,	Thomas R. B. Edmands.
Francis Childs,	
W W. Peirce, *Clerk.*	Charles H. Bigelow, *Sup't.*

1870.

Edward Lawrence, *President.*	Peter S. Roberts,
Francis Childs,	Enos Merrill.
Lyman R. Bingham,	
W. W. Pierce, *Clerk.*	Charles H. Bigelow, *Sup't.*

1871.

Edward Lawrence, *President.*	Peter S. Roberts,
Francis Childs,	James W. Jacobs.
Lyman R. Bingham,	
W. W. Peirce, *Clerk.*	Charles H. Bigelow, *Sup't.*

1872.

Edward Lawrence, *President.*	John Fenderson,
Francis Childs,	Edgar B. Moore.
Lyman R. Bingham,	
W. W. Peirce, *Clerk.*	Charles H. Bigelow, *Sup't.*

Members for 1873.

Edward Lawrence,	Nelson Bartlett,
Francis Childs,	Thaddeus Richardson
Francis Thompson,	

REPORT OF THE CLERK

OF THE

MYSTIC WATER BOARD,

FOR THE YEAR 1872.

REPORT OF THE CLERK.

OFFICE OF THE MYSTIC WATER BOARD.
CHARLESTOWN, March 5, 1873.

Hon. EDWARD LAWRENCE, *President Mystic Water Board:*

Sir,— I have the honor to submit herewith the Annual Report of the Clerk for the year ending December 31, 1872, in conformity with City Ordinance No. 15, Sect. 9.

The number of water takers registered January 1, 1873, was 13,946, distributed as follows: Charlestown, 4,600; Chelsea, 3,200; Somerville, 1,950; East Boston, 4,000; Everett, 196. During the year 1872, the water was supplied as follows, viz: —

	Dwelling Houses.	Families.	Stores and Shops.	Manufactories.	Stables.
Charlestown	4,602	7,447	328	61	296
Chelsea	2,636	3,523	151	19	103
Somerville	1,919	2,500	49	18	213
East Boston	3,094	5,406	289	44	184
Everett	185	213	3	5	20
Total	12,436	19,089	820	147	816

The water has also been supplied for 11 tug boats (these were discontinued during the year), 20 fire engine and hose houses, 83 public schools, 54 saloons, 125 offices, 24 churches, 7 armories, 6 hotels, 5 railroads, 1 brewery, 2 distilleries, 3 gas houses, 2 sugar refineries, 4 tanneries, 2 potteries, 8 brick yards, 3 coal oil companies, 1 bleachery, the Everett Chemical Works, the American Tube Works, the Navy Yard, Naval Magazine, Naval and Marine Hos-

pitals, State Prison, McLean Asylum, 3 City Halls, the Chelsea Ferry Company. and other public and miscellaneous establishments.

The amount of receipts for water rates for 1872 has been as follows: Charlestown, $85,672.96; Boston, $45,397.46; Chelsea, $28,475.95; Somerville, $19,879.63; Everett, $1,818.73; making $181,244.73; and there was due to January, 1873, $20,713.87, making a total of $201,958.60 for that year. The aggregate amount of water rates to January 1, 1873, is $860,586.70.

The expenses of the office for 1872, including all the charges for collection in Chelsea, Somerville, and Everett, were $1,723.55, viz. for clerk hire, $1,233; printing, advertising, and stationery, $490.55. By the terms of the contract with the City of Boston, the sum of $2,500 per annum is reserved by that city for the expenses of collection of the East Boston rates, and all other incidental expenses

The number of places shut off for non-payment of water rates was 71, 61 of which have again been let on. The amount collected for off and on water and fines was $227.00.

Statement showing the number and kind of water fixtures contained within the premises of water takers, to January 1st, 1873.

	Bath Tubs.	Water Closets.			Fountains.	Sinks.	Wash Hand Basins.	Taps.	Private Hydrants.	Urinals.
		Pan.	Hopper.	Self-Acting.						
Charlestown	683	1,024	347	633	8	6,804	1,419	1,547	260	83
Chelsea . .	350	338	98	330	8	3,554	429	493	15	11
Somerville .	383	409	150	306	4	2,390	434	325	80	22
East Boston	303	361	1,084	29	1	6,492	584	409	40	25
Everett . .	18	13		11		234	27	62		-
Total . .	1,737	2,145	1,679	1,309	21	19,474	2,893	2,836	335	141

Statement showing the number and sizes of Meters in use.

	⅝ inch.	¾ inch.	1 inch.	1½ inch.	2 inch.	3 inch.	4 inch.
Charlestown	32	6	12	1	17	1	4
Chelsea . . .	7	2	4	3	4	1	
Somerville .	10		5	3	3		1
East Boston .	25		22		4	2	
Everett . . .	1		1	2	1		
Total . . .	75	8	44	9	29	4	5

Respectfully submitted.

WM. W. PEIRCE,
Clerk.

SUPERINTENDENT'S REPORT,

FOR 1872.

REPORT OF THE SUPERINTENDENT.

CHARLESTOWN, January 15, 1873.

Hon. EDWARD LAWRENCE, *President Mystic Water Board:*

Sir, — Agreeably to the city ordinance I herewith respectfully submit the annual report of the Superintendent for the year 1872.

The works are in a very satisfactory condition. By the completion of the new engine, the pumping capacity of the works has been increased nominally to eighteen million gallons in twenty-four hours, but the real capacity is probably rising twenty millions, which is double the former capacity, and about three times the daily average consumption for the past year. At the same time, though the pumping capacity is largely in excess of the average daily consumption, the addition of the new pump to the works was most timely, as during the extreme cold weather the present winter, the daily consumption has been very large, being at one time three millions of gallons more than the capacity of both the old pumps, so that with them alone, we should have been entirely unable to have supplied the demand.

The daily average increase in the consumption, over that of the previous year, was three and three-tenths per cent, or nearly one and three-quarter million gallons.

The water was let on to the town of Everett about the first of January, and since that time there has been entered two hundred and thirty-three service pipes; there has also been entered a total of one thousand and twenty-four new service pipes in this and the other cities connected with the works, making in all one thousand two hundred and fifty-seven new service pipes. This accounts, to a great extent, for the increase in the consumption. There has also been a large quantity of water wasted in "flushing" out the distribution pipes, and in drawing off the reservoir at East Boston.

LAKE.

The purchase of land by the Board, of James Wyman, about two years ago, has enabled us since that time to greatly improve that portion of it which bordered on the lake, by filling in and protecting with riprap. This riprap has also been extended during the year, on the land now belonging to Mr. Wyman, about four hundred feet, and also about two hundred on the land owned by Stephen Symmes.

The average level of the water in the lake has been ten and six-tenths feet above the bottom of the conduit, or eight-tenths of a foot below high-water mark. The extreme variation in the level was one and five-tenths feet.

The rain-fall for the year, as kept at the engine-house, was forty-five and seventy-one hundredths inches, which is the largest for six years, and nearly double that for the years 1870 and 1871, which was only twenty-four and five-tenth inches. The largest proportion of this was during the summer months, the average for those months being seven and fourteen-hundredth inches, — the heaviest being in August, which was eleven and eighty-hundredth inches, or nearly one foot on the level. This large amount of water, draining as it does very quickly into the lake, must of necessity carry with it a large amount of earthy and vegetable matter, which is probably the cause of the discoloration noticed in the water at different times, and especially at that season of the year. The average depth of water on the overfall at the dam was three inches during the whole year, or about twenty-five millions of gallons daily waste.

CONDUIT.

The water was drawn off from and the conduit thoroughly examined its entire length in October, and found to be in very good order throughout. From the "Head Gate-House" to the "Waste Weir" (abont 600 feet), a considerable collection of vegetable matter, or a growth peculiar to the water, was found to have collected on the sides of the conduit; this was entirely removed and the conduit thoroughly cleansed. At the gate-house the remaining

set of galvanized iron wire screens were removed and replaced by screens made of heavy brass wire. At the gate chamber one set of screens has been refitted with new frames and slides.

PUMPING STATION.

The alteration and improvements which had been commenced and were under way at the time of making my last annual report have all been completed during the year.

The foundation for the new engine was completed about the middle of January, and the work of setting the new boilers was immediately commenced. The new engine arrived January 25th, and the workmen commenced at once to put it up. The work was so far completed, that steam was let on and the engine started up for the first time June 13, and run daily until July 19, and although the engine was in an unfinished state, the results were very satisfactory.

The engine was entirely completed and started again September 20, since which time it has been run continuously (except four days in October). The "Duty" from that time to the first of January was as follows:

September (10 days' run). Gallons per lb. of coal, $486\frac{8}{10}$. Duty 63,518,200 ft. lbs.

October (27 days' run). Gallons per lb. of coal, $477\frac{6}{10}$. Duty 62,077,300 ft. lbs.

November (30 days' run). Gallons per lb. of coal, 488. Duty 64,598,900 ft. lbs.

December (31 days' run). Gallons per lb. of coal, $507\frac{9}{10}$. Duty 71,960,300 ft. lbs.

The capacity of the pumps was to be eight million gallons in twenty-four hours, which requires a minimum of forty-four strokes per minute. The average number of strokes has been about forty-six per minute, which gives eight and a half million gallons in twenty-four hours. The engines will pump nine million gallons in twenty-four hours easily, and could (if occasion should require), I think, be made to pump ten millions.

These results are not only creditable to the builder, but must be very gratifying to the Board, as the engine not only equals in

capacity the terms of the contract, but greatly exceeds it; while the average duty shows, that in economy of pumping it will compare favorably with the best pumping engines in the country.

Engines No. 1 and 2, which have been in almost constant use since they were first started, are now being thoroughly repaired throughout. The old boilers have been turned around and reset in a line with and after the same plan of the new ones. I think that the Board can now safely congratulate themselves, not only of having three of the best pumping engines in the country, but also of having as convenient and commodious an engine-room and boiler-room as can be found anywhere.

The work for the year is as follows: The engines have been run on an average of 21 hours per day, or a total of 7,665 hours for the year, making 27,948,246 strokes, and pumping 2,463,748,840 gallons of water. The amount of coal consumed was 5,907,600 pounds, or 2,867½ tons. Of this amount, there was used in firing and banking 165,600 pounds, and producing 519,370 pounds of ashes and clinkers, or a little less than nine per cent of the whole amount, making the total effective amount of coal 2,449 tons.

FORCE MAIN.

The force main is in excellent condition. During the year, the "check-valves" located in the branch-mains leading from engines numbers one and two, which have been in constant use since the completion of the works, were found to be considerably out of order. The valves were more or less disarranged and the seats badly worn. They have been thoroughly repaired and are now in as good condition as ever.

RESERVOIR.

The reservoir and the grounds adjacent are in good condition, also the gate-house and its appurtenances, requiring but few repairs during the year.

The average depth of water in the reservoir has been $21\frac{7}{10}$ feet. The whole number of gallons drawn from the reservoir during the year, was 2,469,610,719. Average daily consumption, 6,766,056

gallons, an increase per day over that of the previous year of 1,683,084 gallons. The largest amount drawn in twenty-four hours, was 12,028,869 gallons, and the smallest, 4,518,154 gallons.

The relative monthly consumption was as follows: —

December,	247,047,933	January,	217,364,922	September,	205,982,000
March,	245,432,309	July,	212,740,370	October,	191,614,002
August,	222,615,696	February,	207,600,576	June,	187,440,893
May,	186,901,579	November,	179,631,208	April,	165,239,211

SUPPLY MAINS.

The twenty-four inch main is in good condition the entire length, no repairs being required on it during the year.

The leaks that have been repaired on the thirty-inch main were mostly on the middle section in Somerville, on New Pearl street, and on Medford street, between Marshall and Central streets. These all occurred prior to the first of July; since that time but one slight leak has been noticed, so that it may be said to be now in good condition. These leaks were all repaired at the expense of the contractor.

DISTRIBUTION PIPES.

There are now laid in this city, 143,722 feet of distribution pipes, or about twenty-seven miles, an extension during the year of 8,409 feet. The sixteen-inch cast-iron pipe on Canal street has been extended 1,100 feet, to the junction of Richmond street, connecting there with the six-inch pipe on Richmond street. This will be a very valuable auxiliary in the supply to that section of the city on which are located a large proportion of the heavier consumers, viz., Fitchburg, Maine and Eastern railroads, sugar refinery and State prison. It has connections also with South Eden and Lincoln streets, and Frothingham avenue. This was laid by contract, by George H. Norman, Esq., and is a very thorough job in every respect. The old six and eight inch pipes on Alford street have been entirely replaced with new twelve and sixteen inch pipe. The relaying of this pipe was made necessary by the entire change in the lines of this street, and was enlarged on account of the supply

to Everett. There have been repaired on the distribution pipes in this city, fifty-nine leaks, of which thirty-eight were defective pipes, and twenty-one were defective joints.

In Chelsea there has been an extension of 6,190 feet to the distribution pipes, making a total of 133,396 feet, or 25 miles and 1,396 feet. Ten new gates have been located, and ten new hydrants set.

In Somerville there has been an extension of 33,975 feet to the distribution pipes, making a total of 183,347 feet, or 34 miles and 3,827 feet. Fifty-two new gates have been located, and 37 new hydrants set.

In East Boston there has been added to the distribution pipes 5,065 feet, making a total of 117,438 feet, or 22 miles 1,278 feet.

In Everett, the total number of feet of distribution pipe is 68,084 feet, or nearly 13 miles. The number of gates located is 67; hydrants set, 62.

The total amount of distribution pipe now connected with the works is 645,987 feet, or 122 miles, 1,827 feet.

SERVICE PIPES.

The whole number of new service pipes entered in this city during the year was 217; in Somerville, 407; in Chelsea, 238; in East Boston, 162; in Everettt, 233 — making a total of 1,257.

DISTRIBUTION PIPES LAID IN CHARLESTOWN, 1872.

STREETS.	16 in. Feet.	12 in Ft.	6 in. Feet.	4 in. Feet.	3 in. Ft.	2 in. Ft.	TOTAL.	Kind of Pipe.
Monument . . .				420			430	Cement.
Alford	800						800	"
Arlington Ave. .			1,300				1,300	"
Lincoln				300			300	"
Frothingham Ave.					300		300	"
Richmond . . .			100				100	"
Walnut						140	140	"
Stone				300			300	"
Arlington Ave. .			200				200	"
Stanley Pl. . . .						94	94	"
Mill						100	100	"
Alford		275					275	Iron.
Warren Bridge .						500	500	"
Canal	1,100						1,100	"
Fitchburg R. R. .			300	- 80			380	"
Eastern R. R. . .				2,100			2,100	"
Total for the year	1,900	275	1,900	3,200	300	834	8,409	

Laid previous . . . . . 135,313 feet.

Aggregate . . . . . 143,722 feet = 27 miles, 1,162 feet.

Distribution pipe laid in Chelsea, in 1872 . . . . . 6,190 feet.
Laid previous . . . . . 137,296 "

Aggregate . . . . . 133,396 feet = 25 miles, 1,395 ft.

Distribution pipe laid in Somerville, in 1872 . . . . . 33,975 feet.
Laid previous . . . . . 149,732 "

Aggregate . . . . . 183,347 feet = 34 miles, 3,827 ft.

Distribution pipe laid in East Boston, in 1872 . . . . . 5,065 feet.
Laid previous . . . . . 112,273 "

Aggregate . . . . . 117,438 feet = 22 miles, 1,278 ft.

Distribution pipe laid in Everett, in 1872 . . . . . 43,084 feet.
Laid previous . . . . . 25,004 "

Aggregate . . . . . 68,084 feet = 12 miles, 4,724 ft.

Total amount of distribution pipe, January 1, 1873 — 645,987 feet = 122 miles, 1,827 feet.

ENGINE RECORD.

1872. Months.	Time. Hours. Min.	Total number of Strokes.	Strokes per Minute.	Coal Used. Pumping.	Banking.	Total.	Loss by Banking. Per cent.	Loss by Clinker. Per cent.	Wood. Lbs.
January, Engine No. 1	734.00	1,976,256	43.6	522,500	16,200	538,700	3	7.5	0
" " 2	321.00	827,796	42.9						
February, " 1	676.30	1,822,936	44.6	518,000	14,500	532,500	2.7	8.7	0
" " 2	373.30	983,808	43.9						
March, " 1	762 00	1,929,124	42.1	582,400	12,800	595,200	2 1	9.8	
" " 2	471.15	1,243,600	43.9						
April, " 1	692.00	1,908,664	45.9	395,800	5,700	401,500	1.1	5.6	0
" " 2	72.30	230,932	53.						
May, " 1	722.30	1,906,836	43.9	451,600	11,000	462,600	2.1	9.8	0
" " 2	202.30	520,828	42 8						
June, " 1	501.30	1,320,970	43.9	316,200	14,000	330,200	4.1	11.3	0
" " 2	170.00	321,992	32.5						
" " 3	160.30	468,556	48.6	132,300	13,400	145,700			
July, " 1	233.00	568,832	40.4	251,400	6,200	257,600	4.8	7.1	0
" " 2	237.30	629,684	44.						
" " 3	353.00	949,924	44.8	250,200	10,900	251,100			
August, " 1	724.30	1,936,988	44.3	571,700	18,600	590,300	3.4	7.4	0
" " 2	374.30	956,600	42.5						
September, " 1	445.30	1,207,500	45.1	345,300	11,800	357,100			
" " 2	214.00	523,912	40.7				3.3	7.2	0
" " 3	220 30	562,540	42.5	160,900	5,100	166,000			
October, " 3	516.00	1,367,824	44.1	399,600	19,200	417,800			
" " 2	75 30	179,092	39.5						
" " 1	46.00	101,300	36.7	81,700		81,700	4.1	8.9	0
November, " 3	522.00	1,362,824	43.5	391,200		391,200	0	10	200
December, " 3	660.00	1,784,112	45.	536,800		536,800	0	9.6	600
" " 2	115.00	311,836	45.1						

Total Number of Gallons Pumped, 2,463,748,840.

TABLE OF OBSERVATIONS AT LAKE AND RESERVOIR.

1872.	Depth of water on overfall.	Level of lake above bottom of conduit.	Rainfall.	Temperature of water in lake.	Average depth of water in reservoir.	Water drawn from reservoir per month.	Average consumption per day.	Average number of gallons per day to each consumer.	Average number to each inhabitant.
Months.	Inches.	Ft. & tenths.	Inches.		Ft. & tenths.	Gallons.	Gallons.		
January	2 1-2	10.7	7-10	33	21.6	217,364,922	7,495,842	67	61
February	2	10 6	1 36-100	33	21.6	207,600,576	7,158,640	65	58
Mareh	1 9-10	10.9	2 33-100	33	21.2	245,432,309	7,920,399	72	65
April	3	10.9	1 36-100	37	21.9	165,239,211	5,507,977	50	45
May	2 1-2	10.11	3 3-100	59	21.9	186,901,579	6,029,083	54	49
June	7 4-10	11.	5 19-100	74	21.3	187,440.893	6,248,029	56	51
July	0	10.6	5 26-100	80	21 2	212,740,370	6,733,560	61	55
August	4 6-10	9.7	11 84-100	80	21.7	222,615,696	7,181,151	65	58
September	4 3-10	10.8	6 27-100	80	21.9	205,982,000	6,866,066	61	56
Oetober	4	10.8	3 14-100		22.	191,810,726	6,387,133	58	52
November	4	10 5	3 7-10		22.	179,631,208	5,987,707	54	49
Deeember	2	10.	1 51-100	33	22.4	247,047,953	7,969,289	72	65

High-Water Mark in Lake, 11 2-10 Feet above bottom of Conduit.

MATERIALS AND TOOLS ON HAND, JANUARY 1, 1873.

DISTRIBUTION DEPARTMENT.

2 lengths cement pipe, 30-inch; 3 do., 20-inch; 3 do, 16-inch; 4 do., 12-inch; 2 do., 8-inch; 15 do., 6-inch; 15 do., 4-inch; 11 do., 3-inch; 125 do., 2-inch; 1 length 24-inch, cast-iron pipe; 566 feet do., 8 inch; 108 do., 16-inch; 60 do., 6-inch; 3 do.," Ward's patent pipe," 8-inch; 1 clamp-sleeve, 30-inch, for cement pipe; 4 do., 20-inch; 1 do., 30-inch, for iron pipe; 3 do.,20-inch; 2 whole sleeves do., 20-inch; 1 do., 16-inch, for cement pipe; 1 branch, 8 x 4 inches; 1 do., 6 x 6 inches; 1 do., 4 x 4 inches; 1 do., 3 x 3 inches; 1 quarter, 6-inch; 1 do., 4-inch; 5 barrels cement; 9 cutting chisels; 4 caulking irons; 5 cold chisels; 9 plain rubber mittens; 8 gate wrenches; 12 hydrant do.; 12 iron pumps; 1 cast-iron do.; 3 mortar hods; 35 shovels; 37 picks; 5 rammers; 5 bars; 40 lbs. red lead; 4 pump boxes; 6 pails; 5 yards enamelled cloth; 1 roll cotton do.; 8 sledges; 8 wedges; 3 hydrant chucks; $1\frac{1}{2}$ coils winding rope; 1 piece hose, $2\frac{1}{2}$-inch; 3 grapples; 7 sheets galvanized iron; 3 do. common iron; 4 ladles; 10 marches; 3 lead pots; 1 furnace; 12 valves for Lowry hydrants; 24 for side hydrants; 240 Lowry hydrant caps; 30 hydrant and gate stems; 21 brass nuts for hydrants; 8 brass wastes for do.; 3 washers for hydrants; 1 bundle packing for gates; 8 paper rivets; 12 iron bolts for hydrants; 15 frames and covers for do.; 14 frames blowers for gates; 9 metre frames and covers; 1 gate, 6-inch; 1 do., 4-inch.; 185 lbs. gate covers, 2-inch; 147 lbs. plugs, 4-inch; 35 do., 3-inch; lot of lumber for boxes; 11 papers rivets.

SERVICE DEPARTMENT.

312 lbs. lead pipe, 2-inch; 1,131 do., 1-inch; 720 do., $\frac{3}{4}$-inch; 960 do., $\frac{5}{8}$-inch.; 950 do., $\frac{1}{2}$-inch; 340 stop and waste cocks; 59 corporation do.; 698 lbs. service box covers; 51 solder nipples; 2 hose bibbs; 129 tees; 145 couplings; 111 Unions; 80 elbows; 111 bushings; 23 nipples for iron pipe; 90 feet galvanized iron pipe, 2-inch; 100 do., $1\frac{1}{4}$-inch; 332 feet do., 1-inch; 130 feet do., $\frac{1}{2}$ inch; 840 feet cement lined pipe, 1 inch; 560 feet do., $\frac{3}{4}$-inch;

15 drills for iron pipe; 7 taps for do.; 4 reamers; 1 ratchet; 7 drills for cement pipe; 2 die plates; 1 set dies; 9 pair tongs for iron pipe; necessary plumber tools; 30 lbs. fine solder; 50 do. common; 4 lbs. block tin; 8 lbs. bismuth solder.

METERS.

1 meter, 2-inch; 2 do., 1½-inch; 3 do., 1 inch; 2 do., ¾-inch.; 6 do., ⅝-inch; 24 connections for meters; 28 counters for do.

MISCELLANEOUS.

1 tool-chest; 1 hand cart; 6 wheelbarrows; 2 ladders; 23 lantern horses; ½ bbl. rosin; ¼ do., black varnish; 1 pair platform scales; 1 spirit level; 1 stove; 1 clock; 2 water gauges; 2 vises; 11 large lanterns; 3 small do.

STABLE.

3 horses; 2 wagons; 1 light wagon; 1 pung; 1 sleigh; 2 bundles hay; 1 grain chest; 4 blankets; 3 sets harnesses; usual stable tools.

PUMPING STATION.

ENGINE-HOUSE.

Furniture. — 2 desks; 1 table; 2 clocks; 6 chairs.

Tools. — 1 forge; 2 pair bellows; 2 pair tongs; 1 sledge; 1 ratchet; 48 wrenches; 1 anvil; 2 vises; 13 coldchisels; 4 iron bars: 2 brass lanterns; 1 brass tray, and oil-fillers; 2 sets fire-tongs; 3 shovels; 1 coal car; 3 oil cans; 1 waste can; 1 pair platform scales; 1 set pipe-taps and dies; 2 pipe-cutters; 5 kerosene oil lamps; 1 tallow press; 1 pair callipers; 2 saws; 3 brooms; 2 pails; 1 wheelbarrow; 150 feet hose, 2½-inch; 8 feet rubber, 1½-inch; 50 feet, ¾-inch.

Stock. — 1 barrel sperm oil; ¼ barrel kerosene oil; ½ barrel petroleum; 19 pounds waste; 22 feet pipe, 2½-inch; 2 boiler tubes, 4 inch; 2 globe valves, 6-inch; 1 tee, 6 inch; 1 copper pipe; 65 pounds rubber packing; 16 pounds Martin's packing; 450 tons coal; 5 cords wood; 1,000 fire-brick; 2 barrels kaolin.

GATE HOUSES.

2 iron bars; 3 chains; 3 bog-hooks; 3 nets; 2 ice-chisels; 3 boat-hooks; 1 boat; 3 hoes; 6 shovels; 2 wheelbarrows; 1 sledge; 10 pails; 1 oil can; 4 drills; 3 cold chisels; 3 picks; 3 spades; 3 iron rakes; 1 grass-cutter; 3 pumps; 1 table; 3 stoves; 12 brooms; 1 saw; 1 hatchet; 5 lanterns; 50 feet pipe.

PIPE YARD.

1 pair large platform-scales; 36 feet cast iron pipe, 36-inch; 120 do., 30-inch; 265 do., 24-inch; 75 feet steam pipe, 6-inch; 2 whole sleeves, 36-inch; 3 do., 30-inch; 5 do., 24-inch; 4 clamp do., 30-inch; 2 do., 24-inch; 1 derrick; 2 sets blocks and ropes; 1 iron road roller; 1 cart and harness.

Respectfully.

CHARLES H. BIGELOW,
Superintendent.